

HOST PLANT RECORDS FOR NORTH AMERICAN RAGWEED FLIES (DIPTERA: TEPHRITIDAE)¹

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ABSTRACT: Information is given on host plants and infestation rates for 7 of the 8 North American species of *Euaressta*. The host plants are either ragweeds of the genus *Ambrosia* or cocklebur of the genus *Xanthium*, 2 genera of the tribe Ambrosieae (Compositae).

The genus *Euaressta* is a relatively small taxon within the family Tephritidae of the acalyprate Diptera. It includes 8 species from America north of Mexico (Quisenberry, 1950; Foote, 1965), as well as several from south of the United States; however, virtually no host data are available for these latter species and some doubt exists as to whether they actually belong to the genus (R.H. Foote, in litt.). Relatively little is known of the life histories or larval feeding habits of the Nearctic species except that they seem to be associated either with cocklebur of the genus *Xanthium* or ragweeds of the genus *Ambrosia* (Compositae: Ambrosieae). Marlatt (1891) discussed the natural history of *E. aequalis* (Loew), a seed predator of cocklebur (*X. strumarium* L.). Foote (1965) reported that larvae of *E. bella* (Loew) and *E. festiva* (Loew) attacked the seeds of common ragweed (*A. artemisiifolia* L.) and giant ragweed (*A. trifida* L.), respectively. He also listed host plants for selected species of *Euaressta* and discussed briefly the life cycles of *E. bella* and *E. festiva*. Batra (1979) described in considerable detail the courtship behavior and oviposition habits of these two species. Goeden and Ricker (1974a, 1974b, 1976) recorded host plants for *E. bellula* Snow and *E. stigmatica* Coquillett. Wasbauer (1972) listed hosts for 7 species of *Euaressta*.

Because species of *Ambrosia* are prime sources of hayfever-causing pollen (Dickerson and Sweet 1971) and are important weeds in agricultural regions (Danielson *et al.* 1965), various workers (e.g. Harris and Piper 1970) have suggested that seed predators such as the larvae of *Euaressta* spp. could be important biocontrol agents.

The present paper gives information on the host plants and infestation rates for several of the Nearctic species of *Euaressta*.

MATERIALS AND METHODS

Unless otherwise indicated on Table 1, all of the host plant records were obtained by the author. Collections of seeds obtained in the field were

¹Received April 22, 1983. Accepted February 14, 1984.

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transferred to a laboratory where estimates of infestation rates and identifications of the seed predators were made. Each sample consisted of at least 10 involucre containing one or more seeds, with at least three replicate samples of involucre being taken from each host plant. Whenever possible, several individuals of the same plant species were sampled (see columns 3 and 4 of Table 1).

Field-collected involucre were either dissected and examined in the laboratory for *Euaresta* larvae or placed in 4-dram shell vials to allow emergence of adults. Infestation percentages were obtained by dividing the number of seeds containing larvae by the total number of seeds examined in each sample. Identifications of the infesting species of *Euaresta* were based on adult flies that emerged from seeds of each host plant in the laboratory rearings.

RESULTS AND DISCUSSION

Table 1 presents information on the host plants and gives infestation levels for 7 of the 8 Nearctic species of *Euaresta*. Several conclusions can be drawn from the data. It is obvious that considerable variation exists in the amount of seed damage sustained by different host plants. For example, up to 98% of the seeds of canyon ragweed [*A. ambrosioides* (Cav.) Payne] were attacked by larvae of *E. bellula*, whereas never more than 8% of the seeds produced by common ragweed (*A. artemisiifolia*) were destroyed by larvae of *E. bella*. A second observation deals with the infestation levels that were obtained for different species of *Ambrosia* that served as the host plant for the same species of *Euaresta*. Thus, it seems evident that a preferred host of *E. stigmatica* is hollyleaf bur sage [*A. ilicifolia* (Gray) Payne], as up to 90% of its seeds were being utilized. Fairly high infestation levels were also encountered in bur sage [*A. deltoidea* (Torrey) Payne], but no more than 2% of the seeds of canyon ragweed were infested by this species of *Euaresta*. Another conclusion is that different genetic strains of a host plant can show varying responses to *Euaresta* attack. In northeastern Ohio, over half of the seeds of cocklebur contained larvae of *E. aequalis*, whereas the same host plant in southcentral Arizona showed no larval infestation even though the stand occurred well within the range of the fly. Finally, it should be noted that several species of *Ambrosia* apparently are not utilized by any species of *Euaresta*. Seeds of *A. cordifolia* (Gray) Payne (270 seeds examined) collected near Tucson, Arizona and of *A. dumosa* (Gray) Payne (889 seeds) collected in western Arizona contained no larvae or puparia of *Euaresta*. Similarly, no infestations were encountered in *A. bidentata* Michx. (20 seeds, Missouri) or *A. grayi* (Nels.) Shinnars (40 seeds, Nebraska).

The data presented above give credence to the idea that the genus

Euaresta is unified biologically by its restriction to host plants belonging to the composite tribe Ambrosieae. It is obvious that the genera *Ambrosia* and *Xanthium* are heavily utilized, but whether species of other genera of Ambrosieae are also attacked remains unknown. Thus, no records are available for species of *Iva*, *Dicorea*, and *Hymneoclea*.

Table 1. Host Plants and Infestation Rates for North American *Euaresta*

Species of <i>Euaresta</i>	Host Plant	No. of Plants Sampled	No. of Seeds Examined	% of Seeds Infested	Locality of Study
<i>aequalis</i>	<i>Xanthium strumarium</i>	5	200	8.0-55.0	Northeastern Ohio
	<i>X. strumarium</i>	2	80	0.0	Southcentral Ariz.
<i>bella</i>	<i>Ambrosia artemisiifolia</i>	3	180	0.0- 8.0	Northeastern Ohio
<i>bellula</i>	<i>A. acanthicarpa</i>	—	—	—	California ¹
	<i>A. ambrosioides</i>	17	2207	50.0-98.0	Southcentral Ariz.
	<i>A. chamissonis</i>	—	—	—	California ²
	<i>A. chenopodiifolia</i>	—	—	—	California ³
<i>bullans</i>	<i>X. spinosum</i>	—	—	—	California ^{3,4}
<i>festiva</i>	<i>A. trifida</i>	12	2306	2.0-24.4	Northeastern Ohio
<i>jonesi</i>	<i>A. chamissonis</i>	—	—	—	Washington
<i>stigmatica</i>	<i>A. acanthicarpa</i>	—	—	—	California ¹
	<i>A. ambrosioides</i>	17	2207	1.0- 2.0	Southcentral Ariz.
	<i>A. deltoidea</i>	9	841	4.0-33.0	Southcentral Ariz.
	<i>A. ilicifolia</i>	3	40	70.0-90.0	Southwestern Ariz.
<i>tapetis</i>	Unknown	—	—	—	—

1. Goeden and Ricker, 1974a.

2. Goeden and Ricker, 1974b.

3. Foote and Blanc, 1963.

4. Aczel, 1952.

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INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

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ITZN 11/4 (A.N.(S.) 128

5 January 1984

The Commission hereby gives six months notice of the possible use of its plenary powers in the following cases, published in the *Bulletin of Zoological Nomenclature*, volume 40, part 4, on 30 December 1983 and will welcome comments and advice on them from integrated zoologists.

Correspondence should be addressed to the Secretary at the above address, if possible within six months of the date of publication of this notice.

Case No.

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| 2284 | <i>Caeparia</i> Stål, 1877 (Insecta, Dictyoptera): proposed designation of a type species under the plenary powers. |
| 2401 | Proposal to suppress the first designation of a type species for the generic name <i>Megilla</i> Fabricius, 1805, and to place <i>Macropis</i> Klug, 1809, on the Official List of Generic Names (Hymenoptera, Apoidea). |
| 2436 | <i>Crinodes</i> Herrich-Schäffer, 1855 and <i>Pero</i> Herrich-Schäffer, 1855 (Insecta, Lepidoptera): proposed conservation. |
| 1686 | <i>Euphaedra</i> Hübner, [1819] (Insecta, Lepidoptera): proposed conservation under the plenary powers. |
| 1687 | <i>Ourocnemis</i> Baker, 1887 (Insecta, Lepidoptera): proposed conservation under the plenary powers. |
| 2180 | <i>Ceroplesis</i> Serville, 1835 (Insecta, Coleoptera): proposed designation of a type species under the plenary powers. |
| 2405 | <i>Zeugophora</i> Kunze, 1818 (Insecta, Coleoptera): proposed conservation under the plenary powers. |

R.V. MELVILLE, Secretary